

Evaluation of Automatic Flagger Assistance Devices

An In-House study by Organizational Results in cooperation with the Maintenance.

MoDOT Summary Statement

MoDOT has investigated new work zone products to improve safety and productivity since 2002. In recent years, AFAD have gained popularity. This study evaluated three AFAD: a (remote controlled) RC Flagman, an AutoFlagger, and an IntelliStrobe. Cost is one important factor that determines the type of AFAD selected.

AFAD Types

IntelliStrobe

The IntelliStrobe model evaluated has the light indicators and a stop arm. The unit can be controlled from a transmitter carried by the operator located away from the unit. The IntelliStrobe is also equipped with a Lane Intrusion Alarm, which is activated when traffic crosses the safety pneumatic hoses and enters the work zone area.

AutoFlagger

The physical characteristics of the solar powered AutoFlagger, including an octagonal STOP silhouette and triangular SLOW insignia, conform to the existing human flagger operations. Lights are also used to enhance the sign. The operator always has a visual status of the signs and the handheld controller can activate emergency warning horns to alert the workers.

RC Flagman

The mechanical flagger system consists of a red and amber indication signal head, and a PVC flagger arm. The RC Flagman is placed at one end of the work zone substituting one human flagger, and is remotely controlled by a human flagger located at the other end of the work zone.



Intellistrobe



Autoflagger



RC Flagman

AFAD Device	Purchase Price	Additional Cost
IntelliStrobe	\$14,999/pair in 2004	\$1,495 for the trailer
AutoFlagger	\$26,800/pair in 2005	None
RC Flagman	\$30,640/pair in 2001	None

Table 1. AFAD Price Comparison.

MoDOT Project Overview

After reviewing responses from public questionnaires, comments from flaggers who used the devices, and field observations, investigators believe that AFAD provide a useful tool that can enhance the safety of flaggers in work zones on low traffic, two-lane roads.

The response from crewmembers was undeniably positive. Crewmembers see AFAD as a way of removing themselves from the flagging activity. Regarding the AFAD operation, some of the crewmembers' comments are: "it is easy to set up and use," "clearly understandable," and "safe." The fact that the flaggers who tried these devices were very satisfied assures the future acceptance by other work zone workers.

An internal crew survey tracked the usage of the devices, the operator's field observations, and maintenance activities. Public assessment was conducted for the IntelliStrobe and AutoFlagger units. There were 14 AutoFlagger survey responses, and 35 IntelliStrobe survey responses.

MoDOT Staff Findings

The AFAD usage records show that all three units have been performing the required function satisfactorily: to control the traffic (stop and go) on low AADT two-lane routes.

The crews had positive comments on all devices. They considered the AFAD to be an enhancement to work zone safety, with the additional benefit of freeing one person.

The majority of survey participants consider the AFAD more effective than a human flagger. This outcome shows an improvement from the public survey administered two years ago on RC Flagman evaluation, in which not all of the responses were positive. The questionnaire also shows that the public feels IntelliStrobe is well designed, and easy to see and understand. However, the AutoFlagger had one complain of not being able to see the crossbar clearly. By comparing among the three different AFAD, one can deduce:

The Intelistrobe unit is the most cost-effective. Considering both cost and acceptance factors, MoDOT should implement the use of IntelliStrobe AFAD statewide.